WHAT IS CLAIMED IS:

1. An ink cartridge for use with a recording apparatus, which comprises an ink pack formed from flexible material and sealingly storing ink therein, and a cartridge case housing the ink pack and formed hermetically, and which is so constructed that pressurized air is introduced into the case in a mounted state to the recording apparatus, wherein

on one surface of the cartridge case, there are provided positioning means used when the cartridge is mounted to the recording apparatus, an ink outlet port from the ink pack, an inlet port for the pressurized air, and a connection terminal of a circuit board having data storage means.

2. An ink cartridge for use with a recording apparatus according to Claim 1, wherein the positioning means is constructed by an opening hole formed so as to surround a positioning pin arranged in the recording apparatus.

3. An ink cartridge for use with a recording apparatus according to Claim 2, wherein the opening hole constructing the positioning means is arranged at each of two locations along a longitudinal direction on the one surface of the case.

4. An ink cartridge for use with a recording apparatus

according to Claim 3, wherein the ink outlet port from the ink pack is arranged substantially in a center between the opening holes arranged at the two locations.

5. An ink cartridge for use with a recording apparatus according to Claim 3 or 4, wherein the connection terminal of the circuit board and the inlet port for the pressurized air are respectively arranged outside the opening holes arranged at the two locations.

6. An ink cartridge for use with a recording apparatus, which comprises a circuit board having data-readable storage means in which ink information can be stored, and which is removably mounted to the recording apparatus, wherein

the circuit board is attached to a cartridge case within a box-shaped space, two surfaces of which intersect at right angles and are opened;

means for attaching the circuit board is exposed toward one of the opened surfaces; and

a terminal mechanism arranged on the recording apparatus is electrically connected to the circuit board through the other of the opened surface in a state where the cartridge is mounted to the recording apparatus.

7. An ink cartridge for use with a recording apparatus

according to Claim 6, wherein the circuit board attaching means is constructed by a projection for heat-welding, which is formed integrally with the cartridge case.

8. An ink cartridge for use with a recording apparatus according to Claim 7, wherein the circuit board is attached to the cartridge case such that the projection for heat welding is passed through a part of the circuit board and a top of the projection is heat-caulked.

9. An ink cartridge for use with a recording apparatus according to any of Claims 6 to 8, wherein an ink pack that is formed from flexible material and sealingly stores ink therein is housed in the cartridge case, and pressurized air can be introduced into the case in a mounted state to the recording apparatus.

10. An ink cartridge for use with a recording apparatus, which comprises an ink pack formed from flexible material and sealingly storing ink therein, and a cartridge case housing the ink pack and having an outer shell formed hermetically, and which is so constructed that pressurized air can be introduced into the case in a mounted state to the recording apparatus, wherein in case that the ink cartridge is mounted to the recording apparatus, after an ink outlet port formed on the ink cartridge

is connected to the recording apparatus, a pressurized air inlet port formed on the ink cartridge is connected to the recording apparatus.

11. An ink cartridge for use with a recording apparatus according to Claim 10, further comprising:

positioning means provided to the cartridge case, which is used in case that the ink cartridge is mounted to the recording apparatus, and

wherein the ink outlet port and the pressurized air inlet port are sequentially connected to the recording apparatus in a state where a positional relation of the ink cartridge with respect to the recording apparatus is determined by the positioning means.

12. An ink cartridge for use with a recording apparatus according to Claim 10, further comprising:

data-readable storage means that can store therein information data relating to ink sealingly stored in the ink pack, and

wherein in case that the ink cartridge is mounted to the recording apparatus, after the pressurized air inlet port is connected to the recording apparatus, the storage means is electrically connected to a terminal mechanism on the recording apparatus.

13. An ink cartridge for use with a recording apparatus according to any of Claims 10 to 12, wherein the pressurized air inlet port provided to the ink cartridge is formed in a shape of a hollow cylindrical member formed integrally with the cartridge case, and an axial length of a cylindrical surface of the cylindrical member constructing the inlet port is set to 2- 20 mm.

14. An ink jet recording apparatus to which an ink cartridge is mounted, the ink cartridge comprising an ink pack formed from flexible material and sealingly storing ink therein, and a cartridge case housing the ink pack and formed hermetically, being so constructed that pressurized air is introduced into the case in a mounted state to the recording apparatus, and further comprising, on one surface of the case, positioning means used when the cartridge is mounted to the recording apparatus, an ink outlet port from the ink pack, an inlet port for pressurized air, and a connection terminal of a circuit board having data storage means, wherein

in a state where the ink cartridge is mounted to the recording apparatus using the positioning means arranged on the one surface of the cartridge case, the connection terminal of the circuit board is located at an upper portion in a gravity direction with respect to the ink outlet port.

15. An ink jet recording apparatus to which an ink cartridge is mounted, the ink cartridge comprising an ink pack formed from flexible material and sealingly storing ink therein, and a cartridge case housing the ink pack and formed hermetically, and the recording apparatus being constructed so that it can introduce pressurized air into the case,

the ink jet recording apparatus characterized by comprising:

a connection mechanism by which in case the ink cartridge is mounted to the recording apparatus, after an ink outlet port formed on the ink cartridge is connected to the recording apparatus, a pressurized air inlet port formed on the ink cartridge is connected to the recording apparatus.

16. An ink jet recording apparatus according to Claim 15, wherein positioning means used in case that the ink cartridge is mounted to the recording apparatus is provided to the cartridge case, and the ink outlet port and the pressurized air inlet port are sequentially connected to the recording apparatus in a state where a positional relation of the ink cartridge with respect to the recording apparatus is determined by the positioning means.

17. An ink jet recording apparatus according to Claim 15 or 16, wherein the ink cartridge comprises data-readable storage means that can store therein information data relating to ink sealingly stored in the ink pack, and the connection mechanism

includes a terminal mechanism which is electrically connected to the storage means after the pressurized air inlet port is connected to the recording apparatus in case that the ink cartridge is mounted to the recording apparatus.

18. An ink jet recording apparatus according to Claim 17, wherein after electrical connection of the terminal mechanism on the recording apparatus to the storage means on the cartridge side is detected, a pressure pump for generating pressurized air can be driven.

19. A connection structure for an ink cartridge, comprising:

a cartridge holder having an ink inlet tube for connection to a recording head through an ink passage, and

an ink cartridge having an ink outlet tube connectable to the ink inlet tube of the cartridge holder, and a valve body for opening and closing an ink outlet port of the ink outlet tube,

wherein the ink inlet tube is forced into the ink outlet tube of the ink cartridge, whereby the valve body is pressed to open the ink outlet port, and the ink outlet tube and the ink inlet tube are communicated with each other, so that the ink cartridge is connected to the cartridge holder,

the connection structure characterized in that:

a protuberance for pressing the valve body is provided on

a forced end surface of the ink inlet tube, and

an air discharging passage is provided to the protuberance, which communicates with an inside and an outside of the ink outlet port in an air discharged state made by forcing of the ink inlet tube into the ink outlet tube.

20. A connection structure for an ink cartridge according to Claim 19, wherein the air discharging passage is a recess groove formed at an outer surface portion of the protuberance.

21. A connection structure for an ink cartridge according to Claim 19, wherein a recess that can be fitted to the protuberance is provided to the valve body.

22. A connection structure for an ink cartridge according to Claim 21, wherein a tapered surface for guiding the ink inlet tube to the ink outlet tube is formed at each of fitting surfaces of the recess and protuberance.

23. An ink jet recording apparatus comprising an ink jet recording head that is mounted onto a carriage and moves in a widthwise direction of a recording sheet, and sheet feeding means for relatively moving the recording sheet in a direction orthogonal to the moving direction of the recording head, characterized in that a connection structure for an ink cartridge according

to any of Claims 19 to 22 is used.

24. An ink cartridge for use with a recording apparatus, which stores ink therein and includes an ink outlet section that feed out the ink to the recording apparatus in a mounted state to the recording apparatus, characterized in that

the ink outlet section includes an annular packing member and a movable valve member,

the valve member comes into contact with one end surface of the packing member in a non-mounted state to the recording apparatus, to thereby prevent outflow of ink;

contact of the valve member with the one end surface of the packing member is released in the mounted state to the recording apparatus, to thereby enable the outflow of ink; and

at least one groove is formed on the other end surface of the packing member so as to communicate from an inner circumferential surface of a center opening portion to an outer circumferential surface.

25. An ink cartridge for use with a recording apparatus according to Claim 24, wherein plural grooves are radially formed on the other end surface of the packing member so as to communicate from the inner circumferential surface of the center opening portion to the outer circumferential surface.

26. An ink cartridge for use with a recording apparatus according to Claim 24 or 25, comprising:

a spring member for urging the valve member toward the one end surface of the packing member,

wherein, in the mounted state to the recording apparatus, the valve member is pressed back by a leading end portion of an ink inlet tube that comes into sliding contact with and relatively enters into the inner circumferential surface of the opening portion of the packing member, to thereby release the contact of the valve member with the one end surface of the packing member.

27. An ink cartridge for use with a recording apparatus according to Claim 24, wherein:

an annular slide-contact portion is further formed on the inner circumferential surface of the center opening portion of the annular packing member,

the annular slide-contact portion has a reduced inner diameter so as to come into contact with an outer circumferential surface of an ink inlet tube arranged on the recording apparatus, and

the slide-contact portion is offset toward the one end surface of the packing member with which the valve member is contacted.

28. An ink cartridge for use with a recording apparatus according to Claim 24, wherein:

the movable valve member includes a disc member that comes

into contact to the one end surface of the packing member to prevent the outflow of ink, and plural guide members that are arranged intermittently along an outer circumference of the disc member and each extend along a moving direction of the valve member; and

in a state where the contact of the disc member with the one end surface of the packing member is released, ink is fed out through gaps formed between the guide members arranged intermittently along the outer circumference of the disc member.

29. An ink cartridge for use with a recording apparatus according to Claim 24, wherein:

the ink outlet section is arranged in a part of an ink pack that is formed from flexible mater and stores ink therein, and

the ink outlet section is attached to a part of a cartridge case housing the ink pack so as to be exposed from the cartridge case.

30. An ink cartridge for use with a recording apparatus according to Claim 29, wherein:

the cartridge case is formed hermetically, and

the cartridge case is formed with an pressurized air inlet port that can introduce pressurized air into a space between the cartridge case and the ink pack.

31. A connection structure for an ink cartridge, comprising:

a cartridge holder having an ink inlet tube for connection to a recording apparatus head through an ink passage, and

an ink cartridge that is removable held by the cartridge holder and has an ink outlet tube that can communicate with the ink inlet tube,

wherein the ink outlet tube and the ink inlet tube are communicated with each other, whereby the ink cartridge is connected to the cartridge holder,

the connection structure characterized in that:

between the cartridge holder and the ink cartridge, a recess and a protuberance are formed, which can fit or unfit to each other according to right/wrong in connection between the cartridge and the holder regarding kind of color of ink supplied to the recording apparatus head, and

a storage element and data identifying means, which send and receive other ink information data than the kind of ink color in a fitting state of these recess and protuberance, are provided respectively to the ink cartridge and to the cartridge holder.

32. A connection structure for an ink cartridge according to Claim 31, wherein the recess is provided to the cartridge holder, and the protuberance is provided to the ink cartridge.

33. A connection structure for an ink cartridge according

to Claim 31, wherein the recess is provided to the ink cartridge, and the protuberance is provided to the cartridge holder.

34. A connection structure for an ink cartridge according to Claim 31, wherein the storage element is mounted on an IC board.

35. A connection structure for an ink cartridge according to Claim 31, wherein at least one information data of classification of pigment/dye ink, residual ink amount, serial number, expiration date, and an intended type of apparatus is stored in the storage element.

36. A connection structure for an ink cartridge according to Claim 31, wherein the plural recesses and the plural protuberances are provided.

37. An ink cartridge which is removably connected to a cartridge holder having an ink inlet tube leading to a recording apparatus head, and provided with an ink pack having an ink outlet tube that can communicate with the ink inlet tube, characterized by comprising:

a recess or protuberance, which can fit and unfit to the cartridge holder according to right/wrong in connection between the ink pack and the holder regarding kind of color of ink supplied

to the recording apparatus head, and

a storage element that sends and receives other ink information data than the kind of ink color.

38. An ink jet recording apparatus including a head mounting carriage which can reciprocate between a printing region and a non-printing region, characterized in that

a connection structure for an ink cartridge according to any of Claims 31 to 36 or an ink cartridge according to Claim 37 is used.

39. An ink cartridge comprising:

an ink outlet tube that can be removably attached to an ink inlet tube for connection to a recording apparatus head through an ink passage, and

an ink pack that is connected to the ink outlet tube and sealingly stores ink therein,

characterized in that:

a first valve body that is opened or closed by attachment and detachment of the ink inlet tube is provided in the ink outlet tube;

a second valve body is provided on an ink supplying side of the first valve body; and

the second valve is constructed by a check valve that usually closes a tube passage of the ink outlet tube and opens it by

flow of ink at the time of ink supply to the recording apparatus head.

40. An ink cartridge according Claim 39, wherein the second valve body is constructed by a thin plate.

41. An ink cartridge according Claim 39, wherein the second valve body is a valve body that can move in an axial direction of the tube passage.

42. An ink cartridge according Claim 39, wherein the second valve body is formed from elastically deformable material.

43. An ink cartridge according Claim 41, wherein the second valve body is constructed by a spherical member.

44. An ink cartridge according Claim 43, wherein specific gravity of the second valve body is the same as specific gravity of ink.

45. An ink cartridge according Claim 41, wherein a stopper is provided between the first valve body and the second valve body.

46. An ink cartridge according Claim 41, wherein a movement

regulating piece is provided sideward of the second valve body.

47. An ink cartridge according Claim 41, wherein a valve seat corresponding to the second valve body is formed projectingly to an ink supplied side.

48. An ink cartridge according Claim 46, wherein a recess that opens to an ink supplied side is formed in the ink outlet tube, and a leading end portion of the movement-regulating piece is arranged in the recess.

49. An inkjet recording apparatus including a head mounting carriage that can reciprocate between a printing region and a non-printing region, characterized in that the ink cartridge according to any of Claims 39 to 48 is used.